

THE CYPERACEAE OF THE OXFORD UNIVERSITY
EXPEDITION TO SARAWAK IN 1932

by
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Thanks to the kind intermediary of the Director of the Botanic Gardens at Kew, I had the opportunity to work out the Cyperaceae of the expedition mentioned above. The 25 numbers collected belong to 19 species. From the 8 species belonging to the *Mapanieae*, 5 are new to science. Two species of *Carex* are endemic for Borneo. All the other species are either cosmopolitic or at least more widely spread outside this island.

Kyllinga monocephala Rottb., Desc. et Ic. (1773), p. 13.

P. M. Syngé n. 563. Niah. IVth Division, Nov. 1932. Under 300 m. Limestone rocks in moderate sun, near mouth of large caves. Growing in tufts. Leaves ribbed. Spike globular, white, brown in older specimens. Common. Vern. name: tomatong (Malay).

Distrib.: Common in tropical and subtropical Asia, rare in Africa and America. Collected several times in Borneo.

Cyperus diffusus Vahl, Enum. II (1806), p. 321; *C. diffusus* Vahl, *forma primaria* Valck. Suringar, Het geslacht *Cyperus* in den Maleischen Archipel (1898), p. 97—101, Tab. IV. fig. 17.

P. M. Syngé n. 1084, Aug. 2nd 1932, alt. under 300 m. Near Long Kapa, Mount Dulit (Ulu Tinjar) IVth Division. "On ground in shady rain-forest".

P. W. Richards n. 1042, July 31st 1932. Alt. under 300 m. Near Long Kapa. "On ground in deep shade, moist hollow in stony rain-forest".

Distrib.: Tropics generally. Collected in Borneo several times.

Fimbristylis pauciflora R. Br., Prod. (1810), p. 225.

P. W. Richards n. 2015, Sept. 22nd 1932. Alt. c. 800 m. "Moist sandstone rocks in bed of river. Growing in large tufts. Spikelets yellowish green".

Distrib.: East Asia, Malaya, Northern Australia. Collected several times in Borneo.

Fimbristylis miliacea Vahl, Enum. II (1806), p. 287.

P. W. Richards n. 1294, Aug. 16th 1932, alt. under 300 m.
"On bare soil near riverbank, second growth".

Distrib.: Tropical and subtropical countries. Often found in Borneo.

Cladium undulatum Thw., Enum. (1864), p. 353.

P. W. Richards n. 1899, Sept. 17th 1932. Mount Dulit, Dulit Ridge, c. 1400 m. "Open spots in moss-forest on summit of exposed peak. Growing in dense rush-like tussocks.

Distrib.: Ceylon, Malayan Peninsula, Malaya, Australia. Found several times in Borneo.

Hypolytrum proliferum Boeck. in Linnaea XXXVII (1871—1873), p. 126.

P. M. Synge n. 493, Sept. 16th 1932, Ulu Koyan, c. 800 m.
"Growing on sandstonerocks exposed by low river in full sun. Sand forest. Height 15". Heads green. Pale grey at tip. Leaves medium green. Ribbed. Growing in large tufts".

Distrib.: Tonkin, Malayan Peninsula, Celebes. Often found in Borneo.

Mapania. Of the six species, collected by the Oxford University Expedition, five are new, two of the subgenus *Pandanophyllum*, viz. *M. monostachya* and *M. Richardsii*, two of the subgenus *Halostemma*, viz. *M. flagellaris* and *M. angustifolia* and one of the subgenus *Cephaloscirpus*, viz. *M. latifolia*. The fifth is a wide-spread and well-known species.

Mapania palustris F. Villar in Nov. App. Fl. Philip. (1880), p. 309.

P. W. Richards. 1396. Near Long Kapa, Mount Dulit (Ulu Tinjar) IVth Division. Under 300 m. Primary forest on steep stony slope, Aug. 22th 1932.

Distrib.: Philippines, Malay Peninsula and Archipelago. Also found in Borneo.

Mapania monostachya Uitt. n. sp. (subgenus *Pandanophyllum*).

Rhizoma elongatum, gracile, lignosum, radicibus longis, lignosis vix crassius. Folia perangusta, 3—4 mm lata, subcoriacea, uninervia, glauco-virentia, nervo mediano supra impresso, infra valde prominente, marginibus revolutis, cum nervo mediano apicem versus serrulato-scabris, 20—40 cm longa, scapum multo superantia, basi vix angustata complicata, apice longe angustata acumine scaberrimo.

Scapi tenuissimi, 1/3—2/3 mm diametro, 8—9 (in co-typo usque ad 15) cm longi, fusco-punctulati, basi vaginati, vaginis laxis nervosis, viridibus, infimis vix fusciscentibus, suprema 3—5 mm lami-

nata. Capitulum monostachyum, 6—8 (in co-typo usque ad 10) mm longum, sub anthesin 2.5 mm latum, foliis involucralibus tribus (vel interdum quattuor?), obtusis, 13—11 nerviis, fusco-punctulatis, inter se et cum spicula aequilongis, imo 1—3 mm distante.

Glumae oblongae, obtusae, a foliis involucralibus vix diversae, sed paulo angustiores, nervis tenuioribus et minus numerosis. Flores glumis aequilongi, squamellis 6, membranaceis, linearibus, binis lateralibus navicularibus, apicem versus in carina parce ciliolatis, antica nonnisi basi paulo convoluta, ceterum flaccida, tribus interioribus flaccidis, cum staminibus alternis.

Ovarium ellipsoideum, 2 mm longum, apice angustatum, stylo longo, apice bi- (vel tri-) fido praeditum. Nux immatura 3—2.5 mm longa, polygono-ellipsoidea, utrinque sed imprimis apice acuminato-angustata, straminea, fusce punctato-lineolata, interdum subfalcata. Nux matura (in co-typo una adest) 2.5 mm longa, ellipsoidea, turgido-trigona, basi angustata, apice acuminata, straminea, fusco-maculata. Fig. 1.

Ab omnibus *Mapaniis* huius sectionis foliis angustis longe diversa.

BORNEO. Sarawak, Mount Dulit (Ulu Tinjar), near Long Kapa, IVth Division, alt. 400—500 m. Leg. P. W. Richards, n. 1400 (type), 25 Aug. 1932. "Primary forest on steep spur of mountain. Small tussocks". Dulit Ridge, waterfall, alt. c. 1100 m. Leg. P. W. Richards, n. 1801 (co-type), 14 Sept. 1932. "Crevices of sandstone boulders near foot of falls. Leaves deep metallic blue-green". (Type- and co-type-specimen in the Kew-herbarium).

Mapania *Richardsii* Uitt. n. sp. e subgenere *Pandanophylli* (Hassk.) Benth. ex affinitate *Mapaniae humilis* F. Villar, *M. borneensi* Merr. proxima, sed foliis duplo latioribus et capitibus duplo minoribus satis diversa.

Planta incompleta. Folium unicum tantum suppetit, glaucum, 80 cm longum, 4.5 cm latum, apice subito in acumen scaberrimum, 8 cm longum contractum, trinervium, marginibus pro maiore parte laevibus vel scabriusculis, apicem et basin versus scabris, basi gradatim angustatum et duplicatum, nervo mediano infra valde prominente et apicem folii versus serrulato-scabro, nervis lateralibus supra prominentibus. Scapi (tres mihi suppetunt) graciles, 15—18.5 cm longi, 1 mm crassi, subteretes, striulati, apicem versus paullo incrassati, parte basali 5—6 cm longa vaginis fere tribus laxis striulatis, apice tumescentibus ac fuscescentibus vestita. Caput 1 cm longum, 8—9 mm latum, bracteis ternis sterilibus fere orbicularibus, concavis, multistriatis, coriaceis, margine membranaceo lacerato

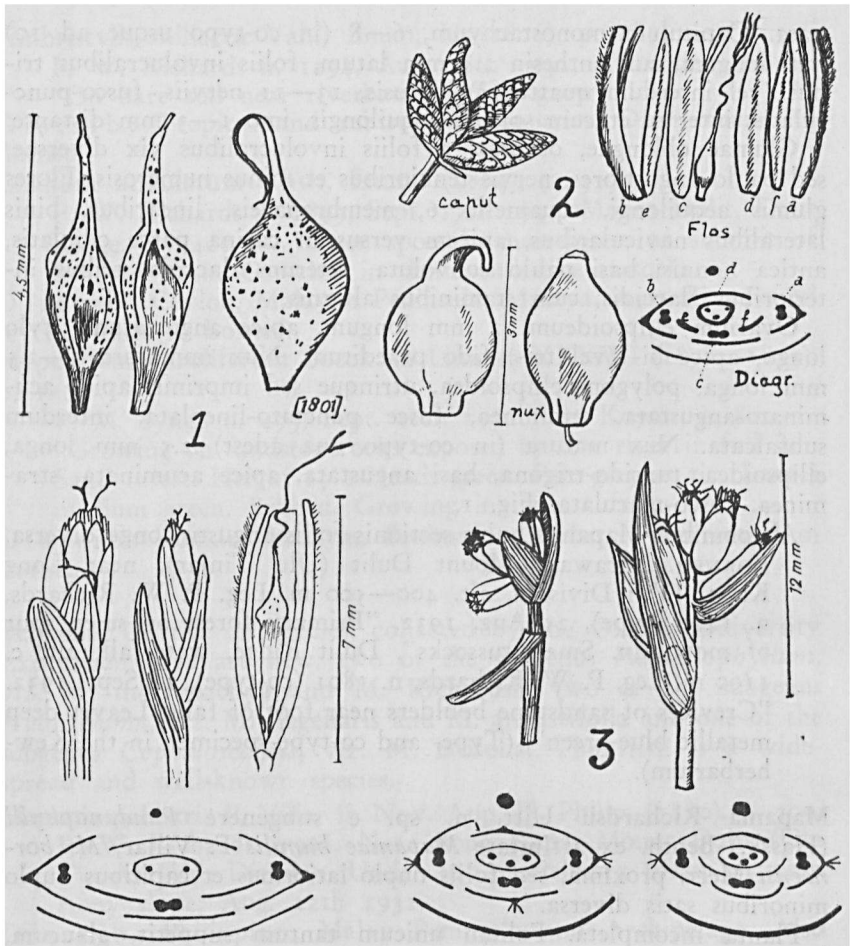


Fig. 1. *Mapania monostachya* Uitt. Nuces immaturae, nux matura cotypi, spiculae, ovarium cum squamellis lateralibus, diagramma floris. (Richards 1440 et quoad nucem maturam Richards 1801).

Fig. 2. *Mapania angustifolia* Uitt. Caput 4-spiculatum, floris analysis, nucs, diagramma. (Richards 1397).

Fig. 3. *Mapania flagellaris* Uitt. Inflorescentiae, diagrammata. (Synge 496).

involucratum, e spiculis (a plerisque auctoribus "spicae" vocatis) fere 6, indistinctis, compressis compositum. Spiculae 7 mm longae, dorso-ventraliter applanatae, sub bractea concava, orbiculari-ovata, chartacea conditae. Flores (vulgo "spiculae" dicti) multi, in axillis glumarum membranacearum, interdum duplicatarum ac in carina setulosarum, squamellis sex, tribus exterioribus stamina includentibus, binis carinatis, in carina piloso-setulosis, tertia plerumque ecarinata, tribus interioribus haud carinatis, concavis. Stamina tria longa antheris linearibus, 3 mm longis exsertis. Stylus trifidus. Nux ignota.

BORNEO. Sarawak, near Long Kapa, Mount Dulit (Ulu Tinjar), IVth Division. Leg. P. W. Richards nr. 1493, Aug. 27th 1932. Dulit Trail. c. 800 m. Primary forest on steep spur of mountain. "Large tussock. Anthers mauve". (Type-specimen in the Kew-herbarium).

The subgenus *Pandanophyllum* may be divided into two groups of species, those with leaves gradually narrowed at the top and those with abruptly contracted, caudate leaves. The species of the latter group have petiolate leaves with exception of *M. borneensis* Merr., but according to the description the leaves of the latter species are nearly twice as narrow and the inflorescences twice as large.

Mapania angustifolia Uitt. n. sp. e subgenere *Halostemma*, *Mapaniae Kurzii* C. B. Clarke et *M. longispicae* Ridl. affinis, foliis angustioribus primo visu distincta.

Rhizoma crassum, lignosum, 1 cm diametro. Folia disticha, equitantia, subcoriacea vel coriacea, glauca, vix trinervia, nervo mediano reliquis multo distinctiore, vaginis spadiceis nitidis, membranaceo-marginatis, basi duplicata margine scaberrima, ceterum sub-triplicata scabra, nervo mediano apicem versus subtus scabro, 7—9 mm lata, usque ad 80 cm longa, longissime angustata, acumine scaberrimo.

Scapi efoliati, e basi caespitis singuli vel trigemini rumpentes, striati, praesertim apicem versus setulis minutis scabriusculi, 1 mm crassi, 18—30 cm longi, basivaginati, vaginis paucis membranaceis, brunneis, singula superiore longiore, usque ad 3 cm longa, breviter (usque ad 2 cm) laminata. Bractee tres, triangulares, nervosae, apiculatae, 2—4 mm longae.

Spiculae sessiles, 3—5 capitatae, ovoideo-ellipsoideae, utrinque sed praesertim apice acutae, 7—13 mm longae, 3—4 mm latae, squamis coriaceis, fuscis, nigropunctatis, margine scariosis, ovatis vel oblongis, apice rotundatis, 3.5—4 mm longis. Flores angusti, squamis aequilongis, squamellis 6, membranaceis, linearibus, late

brunneo-vittatis, binis lateralibus navicularibus, carinatis, carina apice tenuiter ciliolata, ceteris planis. Stamina tria cum squamellis interioribus alterna.

Ovarium ovoideum, basi longiuscule stipitatum, apice in stylum longum, brunneo-punctatum angustatum. Styli rami tres.

Nux 3 mm longa, ovoidea, obscurissime trigona, stipite brevi indistincte trinerve, apice in rostrum perbreve conicum vel paulo longius, recurvatum, interdum applanatum angustata, exocarpio ruguloso cinereo vel fusco-cinereo carnosio, endocarpio ovoideo nigro lignoso. Fig. 2.

BORNEO. Mount Dulit. (Ulu Tinjar) IVth Division. Leg. P. W. Richards n. 1397, 22-VIII-1932. "Under 300 m. Tussocks growing on steep stony slope in primary forest". (Type-specimen in the Kew-Herbarium).

Mapania (subgenus *Halostemma*) *flagellaris* Uitt. n. sp.

Planta glabra, stolonifera. Stolones 0.5 cm crassi, squamis longis efoliatis vel apicem versus foliiformibus dense tecti, apice subito in caulem multifoliatum transeuntes. Folia glauca, infima (fere 7) brevia, e vagina lata et late scarioso-marginata, angustata, acumine longo scaberrimo apice curvato, cetera perlonga (usque ad 90 cm), coriacea, margine serrulato-sabra, uninervia, basi equitantia, tertia parte inferiore duplicato-carinata, sursum valde carinata, marginibus saepe recurvis, 5 (4—7) mm lata, apice sensim in flagellum longissimum margine et in carina serrulato-sabrum saepe apice cirrhi modo involutum, attenuata.

Scapi tenues, 13—20 cm longi, e basi foliorum basaliu rum-pentes, obtuse trigoni, lateribus excavatis, vix 1 mm crassi, basi squamis paucis rotundatis viridibus et foliolis binis, laxe vaginatis, breviter (vix 1cm) laminatis, praediti.

Caput laxum, sub anthesin fere 1 cm longum, sub-spiciforme, e spiculis 4—6 oblongo-ellipsoideis, 5—7 mm longis compositum. Bracteae parvae, spiculas aequantes vel paullo superantes, concavae vel naviculares, herbaceae, multistriatae, margine scarioso brunneo-marginatae, apice acutae vel subacutae, infima paullo remota, longior, 9—12 mm longa. Spiculae (a plerisque auctoribus spicae vocatae) stramineae, basi compositae, glumis membranaceis, ovato-oblongis, obtusis, fere enerviis, fusce punctulato-lineolatis, inferioribus binis (an semper?) spiculam 3—4 florum in axilla foventibus, superioribus 8—10 florem hermaphroditicum (vulgo spicula vocatum) singulum fulgentibus. Flores plerumque fere regulares, trimeri, squamis lateralibus binis navicularibus in carina minute setulosis, antica flaccida vel interdum carinata carina setulosa, interioribus

trinis flaccidis, cum staminibus alternis, ovario (nimis juvenili) anguste oblongo sensim in stylum longum transeunte, styli ramis tribus. Fructus ignoti. Fig. 3.

Differt a *Mapania gracilipede* Merr. et *M. debili* Clarke, quibus proxima, foliis coriaceis, carinatis, multo longius acuminatis.

BORNEO. Mount Dulit, Ulu Koyan, c. 850 m. Sand forest, on ground. "Growing in tufts. Leaves blue-green, ribbed. Heads brownish green". Leg. Native collector 16-9-'32. Synge No.

496. (Type-specimen in the Kew-herbarium).

Mapania latifolia Uitt. n. sp. e subgenere *Cephaloscirpi* (Kurz) Bth., *Mapaniae montanae* Ridl. valde affinis, sed robustior, spiculis majoribus, bractea una longissima et latissima.

Planta incompleta. Caulis apice trigonus, 4 mm diametro, lateribus excavatis, marginibus setuloso-scabris. Caput subcompositum, 5 cm diametro, fere 40-spiculatum, bracteis tribus suffultum, quarum ima paullo remota, longissima, petiolata, basi subvaginata, petiolo 5 cm longo, limbo 45 cm longo, 7 cm lato, viride, uninervio, marginibus levibus, sed apicem versus serrulatis, costa subtus prominente scabra, apice subito contracto.... (acumen deest), secunda 5 cm longa, 2 cm lata marginibus et costa serrulatis, subito in acumen 6 cm longum scaberrimum contracta, tertia fere 2 cm longa.

Spiculae 1.5—2.5 cm longae, oblongae, utrinque acutae, glumis crassis, coriaceis, 11—13 nerviis, 1 cm longis, apice angustatis obtusis, cucullaribus, nervis crassis valde prominentibus. Flores (vulgo "spiculae" vocati) flaccidi, dorsoventraliter incurvati, 9 mm longi, 1.5—2 mm lati, squamellis 6, binis lateralibus navicularibus linearibus apice in carina indistincte piloso-setulosis, antica exteriori linearibus subflaccida, ternis interioribus linearibus, postica flaccida, lateralibus binis semi-anticis concavis subnavicularibus. Stamina nulla, ne rudimentaria quidem, visa. Ovarium stipitatum, stylo longo, apice trifido, stigmatibus revolutis. Nux ignota.

BORNEO. Sarawak, near Long Kapa, Mount Dulit (Ulu Tinjar) IVth Division. Leg. P. W. Richards nr. 1556. "Primary forest on summit of low ridge. Large clump. Anthers mauve. Under 300 m. Aug. 31st 1932". (With "anthers" the stigmas may be meant.). Type-specimen in the Kew-herbarium.

The inflorescence recalls that of some American and African species, f.i. of *M. fluvialis* Sandw. The subgenus *Pycnocephala* Clarke is, however characterized by its bifid style, whereas *Cephaloscirpus* has a three-fid style. The new species is most related to *M. montana* Ridley (not of Lauterb. et Schum., nor of Uitt.), differing only by its remarkably large lower bract, the dimensions

of the inflorescence and the spikelets and the longer and more narrowed glumes. It might be a luxuriant form of the latter.

Thoracostachyum Kurz. There have been described 13 species of this genus. Two of them, viz. *T. lucbanense* Kük. and *T. simplex* Ridl. should be moved to the new genus *Paramapania*, *T. angustifolium* C. B. Clarke should be treated as a variety of *T. floribundum* C. B. Clarke and *T. dichromenoides* Ridl. is a synonym of *T. sumatranum* Kurz.

I have to add one species, viz. *T. Heyneanum* (Back.) Uitt., described as *Mapania Heyneana* Backer in Bull. Jard. Bot. Buitenzorg, Ser. III, Vol. II, p. 328 (1920), collected in the residency of Palembang, Sumatra by Greshoff (nr. 343, Herb. Leiden).

(Note, added in the proofs: *T. montanum* (Laut. & Schum.) Valck. Sur. belongs to the genus *Paramapania*, closely related to *P. amboinensis* Uitt. If it turns out to be the same species, the name of the latter should be altered in *P. montana* Uitt. *T. subcapitatum* Valck. Sur. is *T. bancanum* Kurz., „var. longispica C. B. Clarke”, a monstrous form, due to the attacks of an *Ustilago*.)

Paramapania radians (C. B. Clarke) Uitt. in Rec. Trav. Bot. néerl. XXXII (1935), p. 188 in Med. Bot. Mus. Herb. Utr., nr. 16, p. 188; *Mapania radians* C. B. Clarke in Journ. Asiat. Soc. Straits Branch 46 (1906), p. 226; id. in Kew Bull. Add. Ser. VIII (1908), p. 53; *Hypolytrum radians* Ridl., Flora Malay Penins. V (1925), p. 170, pro parte.

P. W. Richards nr. 1475, Aug. 27th 1932. Dulit, near Long Kapa, alt. c. 500—600 m. "On rock in primary forest on spur of mountain".

Distrib.: Endemic in Sarawak.

Scleria multifoliata Boeck. in Linnaea XXXVIII (1874), p. 510. or *S. sumatrensis* Retz., Obs. V (1779—1791), p. 19, tab. 2.

P. W. Richards n. 1803, Sept. 14th 1932, Mount Dulit, waterfall, c. 1100 m. Ledge at foot of sandstone cliff, unshaded.

Native collector n. 2230. Dulit, near Long Kapa, Mount Dulit (Ulu Tinjar) IVth Division, Oct. 15th 1932. Second growth on river bank.

As there are no fruiting spikelets, the identification is impossible. Both species are widely distributed in East-Asia and previously found in Borneo.

Scleria chinensis Kunth, Enum. II (1837), p. 357.

P. W. Richards nr. 2016, Sept. 22nd 1932. Mount Dulit, Ulu

Koyan, c. 800 m. On shady sandstone boulders by river; P. W. Richards nr. 1660, Sept. 9th 1932, c. 1230 m. On ground in moss-forest.

Distrib.: China, Malayan Peninsula, Malaya, Australia, New for Borneo. The Bornean plants agree with the specimens from the Philippines (*Scleria luzonensis* Palla in A. Kneucker, Cyper. et. Junc. exsicc. VI Lief., 1907, nr. 167) and might be called *S. chinensis* var. *luzonensis* (Palla) Uitt. nov. comb. The Chinese specimens differ through a more compact inflorescence and a rather long and acute ligule. The Australian plants have dense, narrow inflorescences with very long, extending bracts. The surface of the fruit is an unreliable character.

Richards nr. 2016 is entirely woolly haired and may be distinguished as forma *pilosa* (tota planta pilosa, vaginis foliisque subtus sublanuginosis).

Carex filicina Nees in Wight, Contrib. (1834), p. 123; Kükenthal in Engler, Pflanzenreich IV, 20 (1909), p. 274.

P. W. Richards nr. 1549, Aug. 29th 1932. Near Long Kapa, Mount Dulit (Ulu Tinjar) IVth division. "On wet rocks in slight shade on spur of mountain. Growing in small tussocks.

Distrib.: S. E. Asia. Twice found on the Kinabalu.

Carex perakensis C. B. Clarke in Hook. f., Fl. Brit. Ind. VI (1894), p. 720; *C. Wightiana* Nees in Wight, Contrib. (1834), p. 122, var. *c. perakensis* (C. B. Clarke) Kük. in Engler, Pflanzenreich IV, 20 (1909), p. 288.

P. W. Richards nr. 1492, Aug. 27th and 29th 1932. Dulit Trail, c. 800 m. On moist rock in slight shade. "Spikes buff coloured."

Distrib.: Malay Peninsula. New for Borneo.

Carex borneensis C. B. Clarke in Journ. Linn. Soc. XXXVII (1904), p. 14; *C. fusiformis* Nees in Wight, Contrib. (1834), p. 128, var. *borneensis* (C. B. Clarke) Kük. in Engler, Pflanzenreich IV, 20 (1909), p. 598.

P. W. Richards nr. 1663, Sept. 9th 1932. Dulit Ridge, c. 1230 m. "Transition" forest. The culms are 1 m high, the leaves 8—9 mm broad, extremely rough and very pale yellowish-green.; P. W. Richards nr. 1700, Sept. 11th 1932. Dulit Ridge, c. 1250 m. Shady moss-forest. "Leaves somewhat glaucous";

P. W. Richards nr. 1686, Sept. 10th 1932. Dulit Ridge, c. 1200 m. Sandy bank of stream, in shade.

Distrib.: British North Borneo.

Carex Dietrichiae Boeck. in Flora LVIII (1875), p. 122; *C. indica*

L., Mantissa II (1771), p. 574, var. *fissilis* (Boott) Kük. in Engler, Pflanzenreich IV, 20 (1909), p. 264.

P. W. Richards nr. 2231, Oct. 15th 1932. Near Long Kapa, Mount Dulit, IVth Division, under 300 m. Among boulders on river bank.

Distrib.: Borneo.